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   (FILE 'USPAT' ENTERED AT 17:40:23 ON 01 SEP 1999)
                ACTIVATE S09035995/L
                ---------
L1   (      28280)SEA (RESERV? OR ESTABLISH?) (3A) (CHANNEL? OR PATH?)
L2   (       1524)SEA CONVERT? (3A) (DATA FORMAT? OR PROTOCOL?)
L3   (        191)SEA L1 AND L2
L4   (      42661)SEA ENCOD? AND DECOD?
L5   (         60)SEA L3 AND L4
L6   (     227904)SEA (ATTRIBUT? OR TYPE? OR CHARACTERISTIC?) (3A) (NODE# OR
 CO
                MPUTER# OR EQUIPMENT OR UNIT# OR SYSTEM# OR NETWORK# OR HU
B#
                OR RESOURCE#)
L7   (         43)SEA L5 AND L6
L8   (        246)SEA MEMORY AND BROADCAST AND ATM AND IP
L9   (          5)SEA L7 AND L8
L10  (         43)SEA L5 AND L6
L11  (          0)SEA TRANSLAT? (3A) (DATA FORMAT? OR PROTOCOL?) AND L1 AND
L4
                AND L5 AND L6 NOT L7
L12  (          0)SEA TRANSLAT? (3A) (DATA? OR CHANNEL# OR PATH? OR PROTOCOL
?)
                AND L1 AND L4 AND L5 AND L6 NOT L7
L13  (         74)SEA IEEE 1394
                ---------
L14              1 SEA ROUTER (2A) (MULTIPLE? OR PLURAL?) (2A) PROTOCOL?
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US PAT NO: **5,608,874** [IMAGE AVAILABLE] L24: 1 of 1

ABSTRACT:
Method, . . . and apparatus are described for automatically receiving, at an intermediate processing location, data from a wide variety of remote sources, **identifying** the format of the data, translating the data to a common file format, sending the data to a recipient in. . .

SUMMARY:

BSUM(12)

The . . . comprises a system capable of automatically receiving, at an intermediate processing location, data from a wide variety of remote sources, **identifying** the format of the data, translating the data to a common format, sending the data to a recipient in an. . .

DETDESC:

DETD(8)

Destination **Address**--Information that tells the system to whom a data file is to be sent, and therefore, it which Outgoing Data Box. . .

DETDESC:

DETD(33)

Subscriber ID--The unique **identification** key assigned to each subscriber.

DETDESC:

DETD(36)

Subscriber Table--A database file containing subscriber information such as Subscriber ID number, Subscriber Name, Job Number, Translation Information, Subscriber Destination **Address**, and subscriber Filename Information.

DETDESC:

DETD(57)

A . . . these data can be divided into general categories, including, but not limited to ASCII, ANSI X.12, EDIFACT, Binary Files with **Headers**, graphics files, sound files, video files, and alternate compression method files. Such general categories may be further subdivided into an. . . Data File 115 is generically referred to herein as the Provider's Data Format. Regardless of the format used, a Destination **Address** 117, which describes who the data is for, accompanies the actual data within Provider Data File 115.

DETDESC:

DETD(73)

In . . . pertaining to a specific Data Subscriber into a database application such as dbase (Borland, Scotts Valley, Calif.). Adding a

Destination **Address** [illegible] to such a data file is perfor[illegible] by a variety of means, including s[illegible]ply typing in an alphanumeric s[illegible]ng. . . . into a certain field of their file of cleared bank checks. In step 120, Provider Data File 115 with Destination **Address** 117 is loaded into Provider Section 10 computer, into Outgoing Data Box 128. Here, this particular process halts, and does. . . . in detail in the discussion of FIG. 5, steps 235 and 245. The basic problem that all of these methods **address** is that the quality of data ultimately delivered to Data Subscribers 33 must be ensured. Not having safeguards would be. . . .

DETDESC:

DETD(95)

Validation, . . . 235 is performed in any of a variety of ways. In one embodiment, Main Processing Section 20 employs the caller **identification** method to determine whether the caller is valid. By this caller ID method, the telephone number of any party attempting. . .

DETDESC:

DETD(110)

In . . . PreProcessor 363 is needed, based upon which MPS Incoming Data Box contains a Provider Data File 115, or by Destination **Address** 117 residing inside of Provider Data File 115.

DETDESC:

DETD(117)

In step 305, PreProcessor 363 gets Subscriber ID 308 located in Provider Data File 115 **header**. This is done by looking in a given byte location for a sequence of bytes making up Subscriber ID 302,. . . .

DETDESC:

DETD(126)

Returning . . . 354 distributes MidFormat File 342 from Work Area 363 to the appropriate MPS Outgoing Data Boxes 371, using Subscriber Destination **Address** 117 as a guide 371A, 371B and 371C are examples of different Subscriber Outgoing Data Boxes 371, each dedicated to. . . .

DETDESC:

DETD(135)

Provider . . . 1). The purpose of this database is to store relevant information about the customers such as the customer's name, customer's **identification**, **address**, etc.

DETDESC:

DETD(138)

In an alternative embodiment, PrepServer Software 354 detects the appropriate destination from MidFormat File 342 characteristics other than a Subscriber Destination **Address** 117. Such characteristics include but are not limited to the file name, the file size, the file **header**, and the file trailer. By such cues, PrepServer Software 354, in one embodiment, determines the target MPS Outgoing Data Box. . . .

DETDESC:

DETD(162)

FIG. . . . initiates contact with Main Processing Section 20 with telecommunications link 21, for example by modem. Subsequently, Subscriber Section 30 is **identified** by Main Processing Section 20, and assessed as to whether the link is with a valid subscriber. Unless the call. . .

DETDESC:

DETD(163)

In one embodiment, Main Processing Section 20 employs the caller **identification** method. By this caller ID method, the telephone number of any party attempting to establish connection with Main Processing Section. . .

DETDESC:

DETD(207)

When . . . perform the following steps: accept an input file in the form of a fax or scanned image of a document, **identify** the type of document represented, align the image, locate each field of information, extract each field, segment or cut between. . .

DETDESC:

DETD(208)

FIG. . . . via a telecommunication link carrying Fax Bitstream 710 between the fax machine and Fax/Modem 780. Once an incoming fax is **identified**, the computer(s) at Main Processing Section 20 capture each incoming fax page as a unique Fax Bitmap 725 image file.. . . directory. Meanwhile, Fax PrepServer A 720 continuously scans Fax Queue 715 for Fax Bitmap 725 image files. Once PrepServer A **identifies** Fax Bitmap 725 image files in the Fax Queue 715, Fax PrepServer A 720 takes the first Fax Bitmap 725. . .

DETDESC:

DETD(209)

Fax . . . instructions. Forms Processing Software 742 perform the following steps: accepts input files in the form of TIFF images of documents, **identifies** the type of document represented (by means such as reading **identifying** information on the image of a cover page which precedes the transmission of the actual data, or by the recognition of **identifying** information on the images of actual data pages, such as an account number, name, or a specific form layout), align. . .

DETDESC:

DETD(217)

. . .

ID	6	Alphanumeric *Drives internal AR billing system (Platinum AR)
Customer Name	40	Alphanumeric
Contact Person	30	Alphanumeric
Address 1	30	Alphanumeric
Address 2	30	Alphanumeric
City	40	Alphanumeric
State	2	Alphanumeric

Country 15 Alphanumeric
Zip Code 10 Alphanumeric
Voice Number 10 Alphanumeric. . .

DETDESC:

DETD(219)

. . .

SIZE;

Data Transmission Time
8 Numeric
INCLUDED FOR

Target Data Module
2 Alphanumeric
CONSISTENCY.

Number of **Headers**
8 Numeric

Number of Line Items
8 Numeric
Time (A8) is "HH:MM:SS"

CLAIMS:

CLMS(2)

2. . . . said step (A) of transmitting, further includes, prior to said step of monitoring, the steps of:
appending a subscriber destination **address** to said provider data file uniquely representative of a specific subscriber that the data in said particular data file is intended to ultimately reach; and
loading said provider data file with said appended destination **address** into an outgoing data box associated with said provider within said provider section.

CLAIMS:

CLMS(4)

4. The method in claim 1, wherein said provider data file format is a digital image data bit stream **encoding** a printed document.

CLAIMS:

CLMS(9)

9. . . . processing procedure includes the steps of:
accepting an input file in the form of a graphical image of a document;
identifying the type of document represented from among a plurality of known possible document types; aligning the graphical image with known. . .

CLAIMS:

CLMS(23)

23. The method in claim 20, wherein said provider data file format is a digital image data bit stream **encoding** a printed document.

CLAIMS:

CLMS(28)

28. . . . processing procedure includes the steps of:

accepting an input image in the form of a graphical image of a document; **identifying** the type of document represented from among a plurality of known possible document types; aligning the graphical image with

SUMMARY:

BSUM(22)

The inventions relate to **networks**. **Networks** of some **type** have existed for many years to connect sending devices to receiving devices, and the early networks were telephone related. Coexisting. . .

SUMMARY:

BSUM(28)

Other . . . by the present inventions include complete and incomplete Hypercubes and Benes networks which are in turn derived from Clos. Hypercube **type networks** are described in "Incomplete Hypercubes", H. Katseff; IEEE Transactions on Computers, Vol. 37, No. 5, May 1988, 0018-9340/88/0500-0604, pp. 604-608;. . .

SUMMARY:

BSUM(29)

Shuffle . . . is a particular kind of multi-stage network with an interconnection pattern which is described as "Perfect Shuffle". This kind of **network** has better scalability **characteristics** than some other **networks**, and sometimes can achieve good performance. Another application of a shuffle network is for SIMD, as described in "On the. . .

SUMMARY:

BSUM(33)

Other . . . in a second mode wherein said one switching plane and said other switching planes are used for data transfer. This **type** of switching **system** may be called a collision crossbar. It requires at least 10 clocks to set up every stage, is synchronous, and. . .

SUMMARY:

BSUM(42)

The . . . interface to the parallel switch. A first MULTI-MEDIA SERIAL LINE SWITCHING ADAPTER, disclosed herein, receives either serial optical or electrical interfaces/**protocols** and **converts** them into the parallel electrical interfaces/protocols required by the parallel switch. The converted serial data is routed to the selected. . .

SUMMARY:

BSUM(43)

The . . . is personalized by the PROM to understand the protocol generated by that node. The first MULTI-MEDIA SERIAL LINE SWITCHING ADAPTER **converts** the first serial **protocol** to the parallel protocol of the ALLNODE switch and forwards the converted message to the parallel network. The message is. . .

DRAWING DESC:

DRWD(12)

FIG. 11 illustrates the typical method of selecting and **establishing** a transmission **path** through a network comprised of the invention switching apparatus for the purpose of sending data from one node to another.

DRAWING DESC:

DRWD(33)

FIGS. . . . diagram, which shows a typical example of the network send function in regards to sending a message to a previously **established path** in the parallel switch network.

DETDESC:

DETD(4)

The . . . it is finished using a given switch path. Thus, the latency of the central matrix controller approach in regards to **establishing** and breaking switch **paths** is very poor. In existing products, this type of approach has been adequate to connect DASD's, Direct Access Storage Devices. . .

DETDESC:

DETD(10)

Referring . . . network 30. For example, node 1A could send a message using serial data channel 40A to MMSA 20A. MMSA 20A **converts** the serial message **protocol** to a parallel message protocol and sends it to switch interface 46A. MMSA 20A receives destination identification data (DID) as. . . 20A through network 30 to MMSA 20N. MMSA 20N receives the parallel message protocol over switch interface 46N. MMSA 20N **converts** the parallel message **protocol** to the designated serial message protocol and sends it to node 1N over serial channel 40N. Node 1A sends its. . . response message it generates. Node 1N sends the response message over serial data channel 40N to MMSA 20N. MMSA 20N **converts** the serial message **protocol** to a parallel message protocol and sends it to switch interface 46N. MMSA 20N uses the DID it receives to. . . MMSA 20N through network 30 to MMSA 20A. MMSA 20A receives the parallel message over switch interface 46A. MMSA 20A **converts** the parallel message **protocol** to the designated serial message protocol and sends it to node 1A over serial channel 40A. In similar fashion any. . .

DETDESC:

DETD(11)

Referring . . . 20 (MMSA) and the switch network 30 design is demonstrated. The flexibility allows the present invention to support a nodal **system** comprised of various **types** of interfaces. The MMSA can be personalized to support the any one of a number of standard and proprietary serial. . .

DETDESC:

DETD(14)

A . . . illustrates that any node of the system, such as node 4, can

serve as a bridge to another network, whereby **networks** the same **type** as **network** 30 (ALLNODE Switch Networks) can be interconnected to each other through network bridge nodes, like node 4. It is also possible to interconnection to network 30, other networks which are of a different **type** than **network** 30, such as telephone networks, wireless **networks**, or other **types** of multi-stage or crossbar networks through network bridge nodes, like node 4. FIG. 2 shows that bridge nodes, like node. . .

DETDESC:

DETD(16)

Referring . . . when it is finished using a given switch path. Thus, the latency of the matrix switch approach in regards to **establishing** and breaking switch **paths** is very poor. Numbers quoted for the latency of existing matrix switch products usually are in the range of 10. . .

DETDESC:

DETD(17)

In contrast, the present invention applies to low latency fully parallel switch networks, also shown in FIG. 4. In this **type** of **network** there is no shared matrix controller, but the switch fabric and path set-up and breakdown control is provided by the. . .

DETDESC:

DETD(34)

The . . . two clock cycles of serial data over interface 31 from serial registers 54 to switching apparatus 14) to select and **establish** a connection **path** through the switching apparatus 14. The example in FIG. 9 illustrates via dashed lines, the switching apparatus establishing a temporary. . .

DETDESC:

DETD(37)

In . . . of switching apparatus 10 to which to connect. The method of path selection recommended here is one out of N **encoding** with a return to zero (called a DEAD FIELD).

DETDESC:

DETD(41)

In . . . all zeroes (a DEAD FIELD) as shown in FIG. 11. Thus, by clock time 4, switches 10A and 10F have **established** a connection **path** for transferring data directly from Node 1 to Node 7. Up to clock time 5, Node 7 sees nothing but. . . switch 10F. The protocol of the actual data being transmitted can be any of the normal formats such as manchester **encoded**, 8/10 bit **encoding** with preamble, etc. However, the preferred embodiment, as shown in FIG. 11 is an all ones synchronization field at time. . .

DETDESC:

DETD(50)

Referring . . . preferred embodiment 64 nodes because most algorithms which have needed parallel implementation would appear to be serviced

adequately by 64 **nodes**, preferably RS/6000 **type nodes**. This number should not be considered limiting, as 512 or 320[illegible] nodes can be made.into a network with the. . .

DETDESC:

DETD(66)

Referring . . . and trailer interpreted by block 140. Then, the data message is translated into a data message having the parallel switch **protocol**. The **converted** message is stored in the Switch Message Send Buffer 160 until it is received in full, then the Switch Message. . .

DETDESC:

DETD(76)

As . . . 202 of FIG. 17. The processing involves converting them from 10-bit characters to 8-bit bytes by the 10 to 8-bit **decoder** 208. For the preferred serial protocol, the only conversion required for the link header and message data is the 10. . .

DETDESC:

DETD(87)

Referring . . . to IT15 time period and thereafter. The combination of latch 440 being set and latch 442 not being set is **decoded** in gate 466 and defines the second IT12 to IT15 time period when Header Word 1 is written into buffer. . .

DETDESC:

DETD(89)

Referring . . . gate 507 from a combination of the high order 16 bits from register 520 (DID) and 16 bits of the **decoded** network command from block 542 of FIG. 26. Message Data Words are gated to buffer 160 from 4-byte Data Register. . .

DETDESC:

DETD(93)

Referring . . . destination node over network 30. The timing for the Network Message Send function is shown in FIG. 31 including the **establishment** of the network **path** and the sending of the valid message over the network path. When the BUFFER EMPTY signal from block 238 (FIG.. . .

DETDESC:

DETD(95)

Referring . . . preferred network 30 embodiment has two network stages as shown by FIG. 13, and requires two stage routing bytes to **establish** a **path** through network 30--a stage 1 routing byte which is constructed at time ST1 and a stage 2 routing byte that is constructed at ST3 time, as shown in FIG. 31. 3-bit selector 604 and 3-to-8 **decoder** 605 combine to construct the stage 1 and 2 routing bytes from the destination node bytes stored in register 600.. . . ST1, selector 604 selects the low order 3 bits of byte 1 of register 600 to be gated through to **decoder** 605 which converts the 3-bits to an 8 bit code that becomes the stage 1 routing byte, which is transmitted. . .

selector 604 selects [illegible]e next high order 3 bits of byt[illegible] of register 600 to be gated through t[illegible] **decoder** 605 which converts the [illegible]bits to an 8 bit.code that becomes the stage 2 routing byte, which is transmitted. . . is used to enable blocks 604 and 605 only at ST1 or ST3 times, so that for all other times **decoder** 605 passes all zeroes to gate 618; this causes the all zeroes dead fields to be generated during times ST2. . .

DETDESC:

DETD(96)

Also . . . which contain the command field are loaded into register 602, as well as register 600. The Command Register 602 is **decoded** by block 608 into 5 different Local Link Command types. This **decode** is based on the bit definition shown in block 554 of FIG. 27, where bits 21 to 23 define the. . . Command) is set, the command is designated to be executed by block 180, and bits 20 to 23 should be **decoded** to define the specific command type. If bit 16 (Remote Link Command) is set, the command is designated to be. . . bytes and their associated dead fields usually generated by times ST1 to ST4. This is possible because the network 30 **path** connections are already **established** and the portion of the network header which usually performs this function can be skipped.

DETDESC:

DETD(99)

Referring . . . (Local Link Command) is latched in register 602 (FIG. 29) and sent to gate 626 and used to enable the **decoding** of the local commands to be executed by block 180. Local Link commands are not sent to network 30, as. . . transmission of the Local Link Message to network 30. Instead, the Local Write Node ID command, as generated by command **decoder** 608, goes to register 650 through gate 660 and causes a data message word to be written into register 650. . . the network port, a Switch Reset, and other network controls. The Local Write Control Reg command as generated by command **decoder** 608 goes to register 652 through gate 664 and causes a data message word to be written into register 652. . .

DETDESC:

DETD(105)

FIG. . . . command being received is a Remote Link Command as specified by bit 18 of register 554 of FIG. 27 and **decoded** by register 775 and gate 772). When block 170 is commanded to the IGNORE MODE, it never issues OUTX-ACCEPT, OUTX-REJECT,. . . driven active, if the inverse Remote Link Command as specified by bit 18 of register 554 of FIG. 27 and **decoded** by register 775 and gate 754 is active. The END OF MESSAGE signal 752 goes to buffer 150 and causes. . .

DETDESC:

DETD(107)

Referring . . . used to over-ride some normal valid message receiving sequences. In addition, other bits 20 to 23 of register 775 are **decoded** in block 776 to define the individual Remote Link Commands to be executed by block 170. Remote Link commands are. . . Link command from being stored successfully into buffer 150. Instead, the Remote Write Node ID command, as generated by command **decoder** 776, goes to register 650 through gate 660 and causes a data message word to be written into register 650. . . the network port, a Switch Reset, and other network controls. The Remote Write Control Reg command as generated

by command **decoder** 7[illegible] goes to register 652 through gate 664 and causes a data message word to be written into register 652. . .

DETDESC:

DETD(108)

Referring . . . serial message. The serial bit stream sent to module 120 or 122 and is converted to 10-bit parallel data by **encoder** 704 and transmitted through register 702. Register 702 sends all valid messages which are converted into the 10-bit characters of. . .

DETDESC:

DETD(111)

Referring . . . of FIG. 39), and brings together the various portions of the serial message by feeding them to register 702 through **encoder** 704 for transmission to the destination node. The eleventh bit selected by MUX 972 is of the Enable bit for. . .

DETDESC:

DETD(115)

Referring . . . to TT11 cause the associated 10-bit characters to be read from register block 715, sent to Transmit Assembly MUX 708, **encoder** 704, register 702, and finally to the serial transmitter module 120 or 122. The processing performed by block 130 involves. . . DID signal goes to gate 982 of FIG. 44, where it is time multiplexed during times TT0 to TT3 to **encoder** 704 to be converted to 10-bit characters before being sent to register 702 through OR MUX 708. The SID register. . . SID signal goes to gate 982 of FIG. 44, where it is time multiplexed during times TT4 to TT7 to **encoder** 704 to be converted to 10-bit characters before being sent to register 702 through OR MUX 708. The Network Command. . . Header Word 1 data received from buffer 150 at LOAD HEADER WORD 1 time as shown in FIG. 42. The **Decode** Link Command block 966 uses the data stored in register 954 to generate up to 4 LCNTL bytes as controlled. . . LCNTL signal goes to gate 982 of FIG. 44, where it is time multiplexed during times TT0 to TT3 to **encoder** 704 to be converted to 10-bit characters before being sent to register 702 through OR MUX 708. The Message Data. . .

DETDESC:

DETD(116)

Referring . . . TT15 time goes through gate 978 to gate 982, where it is time multiplexed during times TT12 to TT15 to **encoder** 704 to be converted to 10-bit data characters before being sent to register 702 through OR MUX 708. After the. . .

DETDESC:

DETD(120)

Referring . . . TRANS CRC signal to gate 982 of FIG. 44, where it is time multiplexed during times TT16 to TT19 to **encoder** 704 to be converted to 10-bit characters before being sent to register 702 through OR MUX 708. The preferred embodiment. . . 5 generators are active simultaneously, receive byte serial data simultaneously from MUX 982 (FIG. 44) as it is sent to **encoder** 704, and generate 5 different types of common CRC fields simultaneously. During the CRC times TT16 to TT17, the selected. . .

DETDESC:

DETD(121)

Referring . . . of FIG. 39), which brings together the various portions of the serial message by feeding them to register 702 through **encoder** 704 for transmission to the destination node. The eleventh bit selected by MUX 972 is of the Enable bit for. . .

DETDESC:

DETD(122)

Likewise, . . . to gate 708, which brings together the various portions of the serial message by feeding them to register 702 through **encoder** 704 for transmission to the destination node. The eleventh bit selected by MUX 971 is not used, as the ABF. . .

DETDESC:

DETD(143)

The . . . into the PC or workstation memory from one of the various serial transfer media. Serial to parallel emulator software would **convert** the serial message **protocol** to the ALLNODE Switch Network parallel protocol. In the preferred embodiment the PC or workstation would relay the converted message. . . workstation, which would receive the switch parallel protocol message into the PC or workstation memory. Then, the emulator software would **convert** the parallel message **protocol** to the a serial protocol, and relay the message to the appropriate serial interface.

DETDESC:

DETD(148)

With . . . of them can interact. This is because the communication time is infinitesimally small. The "traffic cop" is eliminated and parallel **paths** can be **established** to interconnect multiple processors. In general, in a parallel processing system when there are multiple processors, the processors can be. . .

DETDESC:

DETD(152)

While interconnection **networks** of some **type** have been used in computer systems, there is a need to provide a way for systems to be open, to. . .

DETDESC:

DETD(153)

In . . . now to get excellent performance from short messages as well as long messages. The present system can replace the older **type** long message **systems** which were basically I/O switches and allowed devices like DASD's to send very long messages. This present system can still. . .

CLAIMS:

CLMS(1)

What . . . is:

1. A computer system comprising:
a plurality of processor nodes each including means for transmitting in standard 8-to-10 bit **encoded** serial format a connection request and a data message;
an interconnection network, said interconnection network including a plurality of bufferless switching. . . the discrete control lines control the data message flowing through the switch network and are derived from special 8-to-10 bit **encoded** characters embedded within the standard serial data message; and
each of the adapters further including a second means for receiving said. . . means for recovering the data message from the switch network, converting the data and discrete control lines to 8-to-10 bit **encoding** and embedding said controls with said data to couple network output port to standard serial protocol.

CLAIMS:

CLMS(8)

8. . . . comprising:
a plurality of processor nodes, each including means for transmitting a connection request and information in standard 8-to-10 bit **encoded** serial format and a means for receiving information;
an interconnection network, said interconnection network including a plurality of bufferless switching apparatuses. . . the discrete control lines control the data message flowing through the switch network and are derived from special 8-to-10 bit **encoded** characters embedded within the standard serial data message; and
each of the adapters further including a second means for receiving said. . . means for recovering the data message from the switch network, converting the data and discrete control lines to 8-to-10 bit **encoding** and embedding said controls with said data to couple

ABSTRACT:
A . . . token bus, token ring, and fiber distributed data interface (FDDI), can be implemented using the generic channel architecture and its **characteristics** providing respective **network** functions. The architecture also provides a digital collision detection method and provides information necessary for precise network statistics monitoring. The. . .

SUMMARY:

BSUM(25)

3. Attempts to address these limitations in the prior art lead to higher costs: additional backplane buses or complex **protocol converters** (e.g. network bridges).

SUMMARY:

BSUM(31)

It is an object of the invention to provide a system and an arrangement for **networks** of all media **types**, including twisted pair, fiber optic, thin and thick coaxial cable and others by employing a concentrator which is modular and. . .

SUMMARY:

BSUM(36)

Control Module: A central module that performs functions uniquely related to a **hub**. Example of these **type** of cards are the repeater module in the Multiconnect.TM., and Re-timing module in the System 3000.TM.. The functions associated with. . .

SUMMARY:

BSUM(39)

Bridge Module: A module that implements any type of store-and-forward-function for any purpose. It either **converts** one **protocol** to another, or filters (receive all transmissions from one port, and selectively transmits to another port, or both).

SUMMARY:

BSUM(62)

The . . . may observe an inter-packet gap of a few bit times (a bit time is defined as 100 nano-seconds). When this **type** of **network** scenario occurs, the Ethernet.TM. controller IC may not receive the subsequent packet following the gap and ignore its activity. An. . .

DETDESC:

DETD(10)

The bridging and routing modules 122, 124 are store-and-forward devices that either **convert** one **protocol** to another, filter (receives all transmissions from one port, and selectively transmits to another port), or both.

DETDESC:

DETD(25)

FIG. 4 is a module switching schematic which shows an **encoded** signal representing the selected active channel. Four possible combinations of the signal can be selected for the generic channels A, . . .

DETDESC:

DETD(31)

The input signals ENCHNLB<1:0> represent the selected channel (one of Channel 0, 1,2 or Isolated) in binary **encoded** form. The **decoder** U66 translates these **encoded** signals to generate ENCHNLO3 and ENISOLATE outputsignals. These output signals enable respective channels for LAN communications. The modules switch channels. . .

DETDESC:

DETD(40)

2. . . . are developed, a method of supporting the new protocols on the generic data channel can be designed and included. Costly **protocol converters** are not required.

DETDESC:

DETD(118)

The signals BID<4:0> are a uniquely **encoded** Slot-ID signal per module such that the slot 0 of the concentrator has the binary **encoding** of 00000 and the slot 15 of the concentrator has the **encoding** of 01111. The signals MONADD<8:4> represent the portion of the active module address that corresponds to the Slot-ID. When a. . .

DETDESC:

DETD(133)

FIG. . . . of the state machine describedin FIGS. 13 and 14. The programmable logic device U11, among other independent functions, provides the **decoder** function to translate ENCHNLB<1:0> to ENCHNL<2:0>. For the single port implementation, such as shown here for a Management module, the. . .

DETDESC:

DETD(192)

The . . . uses these lines to determine which of the 17 backplane lines to receive its data from. As with the transmit **decoder,** this function can be overridden by network management. The operation of this element is basically as follows:

CLAIMS:

CLMS(1)

What . . .

one or more ports, each of said plurality of media modules being provided for one or more physical local area **network** media **type** such as fiber optic medium, coaxial cable or twisted pair cable and each of said ports being provided for a. . .

CLAIMS:

CLMS(9)

9. . . .
one or more ports, each of said plurality of media modules being provided for one or more physical local area **network** media **type** such as fiber optic medium, coaxial cable or twisted pair cable and ports of each media module being provided for. . .

CLAIMS:

CLMS(15)

15. . . . accordance with claim 13, wherein:
said management means controls and monitors said Token Ring protocal on said plurality of communication **paths**, said management means **establishes** a logical ring based on said unique slot-ID.

TITLE: Interconnection system and method for **heterogeneous networks**

SUMMARY:

BSUM(2)

The present invention relates to an interconnection system and method for **heterogeneous networks**, and in particular, to an interconnection system and method for **heterogeneous networks** in which a terminal of a local area network (LAN) and a terminal of an integrated services digital network (ISDN). . . .

SUMMARY:

BSUM(3)

In **heterogeneous network** systems, in order to allow communications to be accomplished between two terminals, namely, between an LAN terminal connected to an. . . .

SUMMARY:

BSUM(9)

Namely, . . . to be provided with three function as shown in FIG. 2C, namely, the functions of the bridge 110, an LAN/ISDN **protocol converter** 130 (for an address translation and a route or routing control), and the ISDN inter-connector 120.

SUMMARY:

BSUM(10)

The address translation and routing control unit, namely, the LAN/ISDN **protocol converter** 130 **converts** the communication path identifier (DA, SA, DSAP, SSAP) in a frame received from the LAN 20 into an ISDN communication. . . .

SUMMARY:

BSUM(17)

It . . . an object of the present invention to provide an interconnection system and method capable of facilitating a protocol conversion for **heterogeneous networks**, for example, between the LAN and the ISDN.

SUMMARY:

BSUM(21)

(1) An available ISDN **channel** is determined to **establish** a call with the objective ISDN terminal to open a communication path. In this operation, the DLCI is assigned by the inter-working unit itself or by the ISDN. This results in a correspondence **established** between the communication **path** (DA, SA, DSAP, SSAP) on the LAN side and the

ISDN-side communicat[illegible] path (ISDN channel number, DI[illegible]. Consequently, a frame. . .

DRAWING DESC:

DRWD(3)

FIGS. 2A to 2C are diagrams useful to conceptually explain functions of an inter-working unit 100 for **heterogeneous networks** in accordance with the present invention;

DETDESC:

DETD(2)

FIG. 1 shows a network system as an example of a **heterogeneous network** system including an LAN 20 and an ISDN 30. According to the present invention, the network system of FIG. 1. . .

DETDESC:

DETD(11)

FIG. . . . physical layer), an ISDN inter-connecter 120 for processing the LAPD-C and the layer 1 (ISDN physical layer), and an LAN/ISDN **protocol converter** 130 for achieving an address translation and a routing control. FIG. 7 shows an example of the constitution of the LAN/ISDN inter-working unit 100 according to the present invention. The LAN/ISDN **protocol converter** 130 includes a memory 132 and a central processing unit (CPU) 131, which are connected to a bus 140. The. . .

DETDESC:

DETD(12)

The . . . 30 will be summarized as follows. The LAN layer 1 (circuit unit 111) monitors a signal on the LAN transmission **path** to **establish** a bit synchronization so as to pass a bit series to the MAC 110. The MAC 110 fetches the received. . .

DETDESC:

DETD(22)

If . . . 512 of the received frame to attain an address DTEi of an objective ISDN terminal. Step 712: An available ISDN **channel** is selected to **establish** a call for the objective ISDN, thereby opening a communication path between the inter-working unit 100 and the ISDN terminal.. . .

CLAIMS:

CLMS(1)

We . . .
including an ISDN channel number and a DLCI assigned to said ISDN communication path thus formed if the ISDN communication **path** is not **established** yet;
converting said received LAN frame to an ISDN frame based on said determined communication path information and sending he ISDN. . .

CLAIMS:

CLMS(10)

10. . . . manner from that used in a communication frame format transmitted in said second network, said method comprising the steps of: **establishing** a first interconnection **path** between a first terminal belonging to the first network and the inter-working unit by communicating a first frame between said. . .

CLAIMS:

CLMS(11)

11. . . .
ISDN terminal or to a reception of a communication frame destined to an ISDN terminal from a LAN terminal for **establishing** an ISDN communication **path** between said inter-work means and said ISDN terminal;

US PAT NO: 5,473,608 [IMAGE AVAILABLE]
TITLE: Method and apparatus for managing and facilitating communications in a distributed **heterogeneous network**

ABSTRACT:
A data communication method and apparatus is presented that allows communication in a distributed **heterogeneous network**. Communications managers reside in local processing environments and are responsible for interfacing local end users with the remainder of the **heterogeneous network**. Each communications manager receives distribution units from end users, the distribution units being assigned various priority levels and levels of. . .

SUMMARY:

BSUM(2)

The invention relates to a method and apparatus for managing and facilitating communications in a distributed **heterogeneous network**.

SUMMARY:

BSUM(19)

More particularly, the present invention includes a method and apparatus for communicating between communications managers of a distributed **heterogeneous network**. Within the network, at least one of the communications managers operates on an operating platform which is different from the operating platforms of other communications managers in the **heterogeneous network**.

SUMMARY:

BSUM(20)

To . . . privileged end users and non-privileged end users. The privileged end users typically perform system management functions and communicate through the **heterogeneous network** by use of system management distribution units, whereas non-privileged end users typically transfer information or data distribution units between one. . .

SUMMARY:

BSUM(22)

For each distribution unit, the communications manager determines an adjacent communications manager along a communication path within the **heterogeneous network** from the origin end user to the destination end user. After determining the adjacent communications manager, the distribution unit is. . .

SUMMARY:

BSUM(27)

The . . . processors that share common functions, for example, data

base searching functions. Thus, the information processors which are distributed throughout the **heterogeneous network** can be collected into subsets or complexes of information processors when the information processors within a complex perform common functions.. . .

DRAWING DESC:

DRWD(2)

FIG. 1 is a distributed **heterogeneous network** embodying the communications manager of the present invention.

DETDESC:

DETD(75)

FIGS. . . . Stack specific to that local environment may be used. However, if the application (EU) must communicate with remote applications across **heterogeneous Network** Protocol Stacks then the facilities of the CM of the present invention must be used.

DETDESC:

DETD(324)

If . . . path may range across multiple network protocol stacks. When this occurs, the distribution will arrive at CM Gateways which will **convert** one network **protocol** stack flow to another. Network Nodes which communicate with other Network Nodes via the same network protocol stack are referred. . .

DETDESC:

DETD(392)

As . . . the EUs. Its function is to provide a standard API to all EUs and to shield the EUs from the **heterogeneous Network** Protocol Stacks within the **heterogeneous network**. In the execution of this functionality the CM serves as the primary interface to the Network Protocol Stack. Therefore, the. . .

CLAIMS:

CLMS(1)

What is claimed:

1. A method of communicating in a distributed **heterogeneous network** including a plurality of information processors, each information processor having associated therewith an actual communications manager, at least one subset. . .

CLAIMS:

CLMS(3)

3. A method of communicating in a distributed **heterogeneous network** including a plurality of information processors, each information processor being connected to a network node having associated therewith an actual. . .

CLAIMS:

CLMS(5)

5. A method of communicating in a distributed **heterogeneous network** including a plurality of information processors, each information processor having associated therewith an actual communications manager, at least one subset. . .

US PAT NO: 5,323,392 [IMAGE AVAILABLE] L22: 8 of 9

SUMMARY:

BSUM(10)

Because . . . and standards, there is a outstanding need in the telecommunication industry, for communication between data processing devices attached to possibly **heterogeneous networks**. This means interconnecting of these networks, also called internetworking. It is for example easily understandable that the owner of several. . .

SUMMARY:

BSUM(12)

Such . . . protocols but carry on some important differences. Differences are also found at the layer 3 level. Data processing devices and **heterogeneous networks** therefore need some kind of adaptation for interconnecting purpose, and this is achieved by means of adaptation devices. FIG. 4. . .

SUMMARY:

BSUM(28)
converting incoming parameters regarding frame sequence numbering from the first HDLC **protocol**, into **converted** parameters for the second HDLC protocol,

SUMMARY:

BSUM(30)
adding a gap to the value of the last incoming receive parameter from the first **protocol**, to obtain a **converted** send parameter for the first protocol, and